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THE GEORGE WASHINGTON UNIVERSITY
Graduate School of Arts and Sciences



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Office of Naval Research under
Contract Number N00014-75-C-0610

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THE SUPPLY OF WOMEN ENLISTEES AND
THEIR UTILIZATION IN THE NAVY

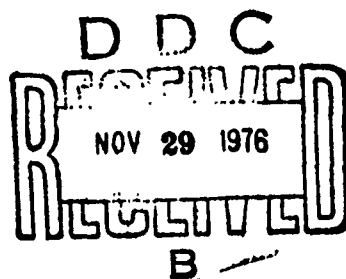
by

Kate A. Arbogast
Charles T. Stewart, Jr.

Serial TR-1283
June, 1976

The George Washington University
Graduate School of Arts and Sciences
Econometric Research on Navy Manpower Problems

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NONE
Security Classification

DOCUMENT CONTROL DATA - R & D

Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) THE GEORGE WASHINGTON UNIVERSITY GRADUATE SCHOOL OF ARTS AND SCIENCES ✓ ECONOMETRIC RESEARCH ON NAVY MANPOWER PROBLEMS		2a. REPORT SECURITY CLASSIFICATION NONE	
		2b. GROUP	
3. REPORT TITLE (6) THE SUPPLY OF WOMEN ENLISTEES AND THEIR UTILIZATION IN THE NAVY, ✓			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) SCIENTIFIC			
5. AUTHOR(S) (First name, middle initial, last name) (10) KATE A. ARBOGAST - CHARLES T. STEWART, JR. ✓			
6. REPORT DATE (11) June 1976		7a. TOTAL NO OF PAGES (12) 52p. 50	7b. NO OF REFS 30
8a. CONTRACT OR GRANT NO. (15) N00014-75-C-0610 ✓		9a. ORIGINATOR'S REPORT NUMBER(S) (14) TR-1283 ✓	
b. PROJECT NO. WU NR 347-024		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
c.			
d.			
10. DISTRIBUTION STATEMENT This document has been approved for public sale and release; its distribution is unlimited.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY Office of Naval Research	
13. ABSTRACT There is an excess supply of qualified female volunteers for the Navy. Wider training and occupational opportunities would allow the Navy to meet 5-7% percent of its enlisted personnel needs with women. The wider occupational choice, changing regulations on marriage and pregnancy, and adoption of the same induction standards for women as for men, greatly increase the potential supply of women for the Navy. A			

DD FORM 1 NOV 65 1473 (PAGE 1)
S/N 0101-807-6801

- 11 -

NONE
Security Classification

408 148

mtx

14	KEY WORDS	LINK A		LINK B		LINK C	
		ROLE	WT	ROLE	WT	ROLE	WT
	WOMEN						
	FEMALE OCCUPATIONS						
	TRAINING						
	OCCUPATIONAL CHOICE						

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DDC	Buff Section <input type="checkbox"/>
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DISTRIBUTION/AVAILABILITY CODES	
PR	AVAIL. No. for Special

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0. Introduction

The extensive use of the draft by the Armed Forces during the post-war period highlighted the continual shortage of qualified manpower volunteering to the defense establishment. Nevertheless, there was, and remains, a general lack of recognition of the drain of manpower made by the defense establishment on the civilian economy. Since the end of World War II, the military has made up a minimum of 2.4 percent, and as much as five percent, of the total labor force.

Little attention has been paid to the actual and potential role of females within the military establishment. Not once does Wool's study of enlisted manpower needs and supply, The Military Specialist [30] refer to military women -- other than peripherally in tabular presentations of strength of military distribution by branch of service. Wool describes military demand as the emergence of the military specialist and then examines military occupational trends since World War II. Wool does not seem to purposefully write a male-oriented book, as much as he seems to never have considered women at all. Active consideration of more intensive use of womanpower was initiated by the Department of Defense All-Volunteer Force Task Force only in the Spring of 1972. At that time women were less than two percent of the military (see Table 1).

* This report was prepared under the Navy Manpower R&D Program of the Office of Naval Research under Contract Number N00014-75-C-0610.

TABLE 1
FEMALE MILITARY PERSONNEL ON ACTIVE DUTY,
BY BRANCH OF SERVICE, SELECTED YEARS,
1945-1972

Year ^a	Women, as % of all military	Grand total	Army	Navy	Marine Corps	Air Force
1945	2.1%	265,006	153,716	92,853	18,437	b
1950 ^c	1.5	22,069	10,982	5,193	580	5,314
1952 ^d	1.3	45,934	17,434	11,268	2,462	14,770
1955	1.2	35,191	12,938	8,643	2,248	11,362
1960	1.3	31,550	12,542	8,071	1,611	9,326
1965	1.2	30,610	12,326	7,862	1,581	8,841
1970	1.4	41,479	16,724	8,683	2,418	13,654
1971	1.6	42,775	16,865	8,801	2,259	14,850
1972	1.9	45,033	16,771	9,442	2,329	16,491

^aFigures represent strength as of the end of the fiscal year.

^bThe Air Force was not a separate branch of the Service until 1947.

^cThe year 1950 includes Army personnel assigned to Air Force Command; excludes Air Force personnel assigned to Army Command.

^dKorean War peak female strength was reached in October 1952.

Source: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States (Washington, D.C.: Government Printing Office, 1970), p. 257, and unpublished data from the U.S. Department of Defense, Office of the Assistant Secretary (Comptroller), Directorate for Information Operations (Washington, D.C.). [21].

As recently as 1966, the Inter-Service Working Group on Utilization of Women in the Armed Services reported that ". . . the Services ability to utilize women in most non-combat occupational areas far exceeds their capability to recruit." [24]. Recruiters at that time, however, were reported by the Inter-Service Working Group to see no difficulty in meeting enlisted goals.

The Navy and Air Force are currently having no difficulty meeting their recruiting goals. The Air Force states that it is currently turning down as many or more qualified women applicants as it is accepting. [24, p. 49].

Currently the Services do not keep records of applicants who are turned away. If all that is known about the supply of females to the Navy is that an excess supply exists, that is insufficient information for planning and policy formulation. Evidence indicates that, for the Navy, the queue is "large" -- and estimates have been discussed that up to one-third over the quota are turned away.¹ The number of women available to the military depends in part on the range of occupations open to them. Substantial opening of military occupations to women did not take place until Fall of 1972. But it is very difficult to allocate recruiting resources and to formulate enlistment and reenlistment policy on the basis of such scant information.

The work done in the area of investment in human capital provides a theoretical basis for further analysis of supply [17]. This study analyzes the demand for and the supply of female military personnel, in particular for the Navy. The supply of females to the military is

¹In a discussion of the factors behind the women's services never having reached the two percent quota of regular enlisted strength limitation, National Manpower Council, Womanpower: A Statement by the National Manpower Council with Chapters by the Staff (New York: Columbia University Press, 1957) [14, p. 291], hereinafter referred to as Womanpower, it was stated that:

"A major reason for the failure to reach authorized strength has been the desire of all services to keep enlistment standards relatively high. In general the women's services have accepted less than one third of those who apply."

examined from the perspective of occupational choice theory in parts I and II. Parts III and IV take up the problem of procurement of women for the Armed Services. Demand is estimated with various constraints on the utilization of females. Supply is also estimated in the absence of recruiting constraints.

I. Female Occupational Choice

Discounted lifetime earnings in alternative occupations, net of training and education costs, is an accepted economic approach toward occupational choice. The decision to enlist is not in most cases clearly an occupational choice. Nor is it simply a job choice. To a considerable extent, it is a decision on occupational training which is a precursor to occupational choice.

In one respect the decision to enlist differs from nearly all alternatives in the civilian labor and training/educational markets: It involves the volunteer in a long-term contractual commitment -- typically a four-year enlistment -- which is a very long time considering the average age of the enlistee, his previous labor market experience, and the normal labor market turnover for workers of enlistment age. The commitment is not just to a single employer but to a particular way of life that is very different from that experienced by most in the civilian labor market. The enlistee is in the military twenty-four hours a day, seven days a week, by contrast with the civilian worker on an eight-hour day, five-day week. He wears a uniform and is subject to military discipline.

The discussion above applies to both males and females. There are, however, important differences between the occupational decision of most women and of men that apply to both military and to civilian choices, plus additional differences (now largely eliminated from regulations) that refer only to military occupational decisions. The generic difference is the intermittent nature of the work commitment and experience of most women. Most women have an occupational option not open to most men: Marriage and the job of a housewife. Most women, in fact,

select this option for a considerable part of the working-age span of life. The difference specific to military enlistments is discrimination against women with minor children and pregnant women.

The occupation housewife is quite different from other occupational choices in several respects. Training and education are not required, and imputed earnings are little related to educational differentials. Thus, the investment approach is not pertinent. More important, it is clear that the choice is not dominated by differential earnings among alternative occupations (using imputed earnings for the housewife). It is a choice that, like the military occupational choice, involves a way of life. Although in the civilian economy the occupation of housewife and other occupations are not mutually exclusive alternatives, the choice between housewife and military occupations is pretty much either/or.

In the economic literature, it is assumed that occupational choice will be based on the maximization of lifetime earnings, given tastes. Later, a case will be made that the enlistment decision is based on utility maximization, taking into account the individual's preferences between the occupations, as well as differences in monetary return. Then, occupational choice is regarded as a maximization problem whereby individuals are seen as selecting between occupations on the basis of the time shape of the income stream of earnings generated by the occupation (net of entry costs), given a set of preferences [4].

Because different occupations have quite different requirements for entry, some occupations require a greater initial investment than others. At the same time, the future stream of earnings varies widely among occupations. The initial investment is broken into formal education and informal or on-the-job training (OJT). OJT is then broken into two components, general training and specific training [3]. Formal training could also be broken into general and specific components. General training leads to a rise in an individual's productivity to all firms, whereas specific training increases the individual's productivity more for the firm concerned than for other firms, i.e., the firm giving the training captures most, if not all, of the rise in productivity.

In the case of general training, the workers must bear the full cost of the training in the form of a lower wage.

Training obtained in the Navy differs from on-the-job training in many entry jobs: it is full-time, of some considerable duration, and qualifies an individual for a better job than he would have been able to obtain without it, quite apart from the three to four years of experience in the Navy. It involves a decision to invest in training, the cost of which is the three or four-year enlistment period in the Navy, rather than tuition, earnings foregone, etc.

The military provides training to its personnel at no monetary cost to the enlistee and at the same time the enlistee receives full pay. The training in the military is either school training or on-the-job training, but for a particular skill, after an adequate period of time, the enlistee is considered fully trained regardless of the source of his training. Some skills in the military have easily identifiable and transferable counterparts in the civilian economy, others do not.²

The occupational decision of men and women must of necessity be different because most males enter the labor force for a continuous time stream, whereas females typically do not. Because the female work life is typically a period of work in the market, non-market work, and leisure, it can be argued that the decision made by the female is not one based on the maximization of lifetime earnings as the concept applies to males. One cannot measure lifetime earnings in a strict sense for most females. Not only does the female occupational choice offer some features peculiar unto itself, but also a decision between military and civilian life has unique characteristics.

II. The Female Military Occupational Choice

The female Navy enlistee is an example of a group that has opted for a three or four-year period and which is approximately homogeneous

²Examples of skills that transfer readily to the civilian economy are Navy Air Controlman and civilian air traffic controller, Navy Electronic Technicians and civilian electricians.

with regard to age, education and experience. The minimum age requirement for the Navy female is eighteen, but more women enlist at age nineteen than at any other age. The minimum educational attainment level acceptable for the Navy is a high school diploma or its equivalent. More than 90 percent of all those enlisting during fiscal year 1972 were high school graduates with no further education. Work experience prior to entering the Service falls into four broad categories: office, factory, hospital, and restaurant work [19]. About 70 percent or more of the enlistees had worked for wages after leaving high school and before their enlistment. Within the group there are qualitative differences; however, the test scores from the Armed Forces Selection Test (AFWST), given to all women, allow one to make adjustments for differences in quality.

A. Compensation and Training in the Military

Table 2 contains data on the average annual regular military compensation, for enlisted grades E-1 to E-5 (the figures do not contain the amount paid monthly for clothing allowance during the first three years, or \$6.90 per month, nor the value of medical care and retirement options), as well as median earnings of all women in the experienced civilian labor force and those women aged 18-24 years for 1970. To be eligible for reenlistment, an individual must have passed an examination for advancement to pay grade E-4, and be currently recommended for advancement.³

The lowest grade, E-1, is used as the wage offered by the military to enlistees, or \$5,419.17. To make a valid comparison of military versus civilian earnings, it is necessary to consider full-time workers, or those employed 50-52 weeks a year, because there is no unemployment in the military, and further to consider earnings for high school graduates only. Slightly more than 50 percent of all females with four years of high school in 1970 are in clerical occupations, slightly more than

³This is a simplification of the criteria for reenlistment eligibility.

TABLE 2
MILITARY EARNINGS COMPARED WITH FEMALE CIVILIAN MEDIAN
EARNINGS, BY AGE AND OCCUPATIONAL GROUP, 1970

Pay Grade	Basic pay	Basic allowance for quarters	Basic allowance subsistence	Federal tax advantage ^a	Regular military compensation ^b
E-5	\$5,803.05	\$1,523.66	\$602.25	\$459.67	\$8,388.63
E-4	4,785.34	1,198.74	602.25	395.54	6,981.88
E-3	4,354.48	1,027.21	602.25	348.45	6,332.39
E-2	4,107.60	886.64	602.25	325.52	5,922.01
E-1	3,686.40	825.07	602.25	305.45	5,419.17
<hr/>					
Occupational Group	Female Median Earnings, 50-52 weeks worked				
	All females 16 and over				
	Females 18-24				
Professional					\$5,099
Clerical	\$6,872				4,451
Craftsmen	5,110				4,557
Operatives	5,277				4,309
	4,147				

^a At 1973 rates.

^b Regular military compensation is defined as basic pay, quarters, subsistence, and the tax advantage that accrues because quarters and subsistence are not subject to Federal income tax.

Source: U.S. Congress, House, Committee on Armed Services, Pay and Allowances of the Uniformed Services, H.A.S.C. No. 93-4, 93d Cong., 1st sess. (Washington, D.C.: Government Printing Office, 1973) [18, p. 86], and U.S. Department of Commerce, Bureau of the Census, U.S. Census of the Population: 1970 [23], Final Report, Earnings by Occupation and Education, pp. 399-407, and U.S. Summary, Detailed Characteristics of the Population, [22, pp. 772-773].

11 percent are in operative occupations (including transportation), and about 15 percent are service workers. Female high school graduates employed 50-52 weeks in clerical occupations had median earnings in 1970 of \$4,451, and female high school graduates employed 50-52 weeks in operative occupations in 1970 had median earnings of \$4,309 [23].

The Navy offers a pecuniary advantage to females in specific ratings in which women have been concentrated: Yeomen and Hospital Corpsmen.⁴ Average median earnings in the corresponding Census occupational categories for those who worked 50-52 weeks in 1970 were \$5,252 for the former and \$4,835 for the latter. Civilian median earnings of high school graduate women aged 18-24 are estimated to be \$5,305 and \$4,927, respectively, for Yeomen and Hospital Corpsmen. Even without adjusting for costs of training, the military clearly offers an economic advantage to the prospective enlistee.

Another reason women would find the Service a continuing attractive alternative is the fact that training is not as readily available to women in the civilian economy as it is to men. This is often the case because women have a higher turnover rate than men.⁵ As Mincer points out, this is especially true if there is any specificity to the training.

⁴The corresponding Census categories for the Navy rating Yeomen are office managers, not elsewhere classified; stenographers; clerical supervisors; and typists; and for the Navy rating Hospital Corpsmen, clinical laboratory technicians; health record technicians; health technicians, not elsewhere classified; and health aides, excluding nursing.

⁵The U.S. Department of Labor, Women's Bureau. Handbook on Women Workers, Bulletin 294. (Washington, D.C.: Government Printing Office, 1969, [27, p. 78], reports that:

"... in January 1966, ... on the average women had spent 2.8 years on the current job as compared with 5.2 years for men. Job tenure increased with age, but somewhat less for women than for men."

. . . the employer will prefer men to women trainees, even if the latter profess occupational ambitions. This . . . implies that to the extent that women do obtain specific training they bear a larger fraction of the total cost of such training than men
[13].

The value of the training that the military offers depends in part on whether the training received was general or specific to the military. Also, it is well documented that women typically receive a lower wage than men for equal work in the civilian economy.⁶ This discrimination does not exist in the services.

B. Maximizing the Net Advantages of an Occupation

The conventionally used lifetime earnings approach to occupational choice needs to be modified for several reasons. It is highly likely that most enlistees, regardless of sex, view the first tour of duty in the Service as a temporary period in their lives. The military represents a discontinuous activity for many enlistees, not an occupational choice. But even if the military is an occupational choice, a lifetime earnings approach would be unsuitable for women. The loose attachment to the labor force most females exhibit means that they receive a discontinuous stream of lifetime earnings whose discounted sum is subject to great uncertainty.

Service training is provided at zero cost to the individual. This means that the individual's opportunity costs (income foregone) approach zero within the military; one receives full pay whether or not one receives training. Zero occupational investment costs imply an infinite private rate of return. In civilian life, on the other hand, individuals must bear all or part of the costs of training, depending on whether or not the training is general or specific, and incur substantial opportunity costs of income foregone. The result of these differences is that alternatives are not comparable on a private rate of return basis.

⁶The earnings differential is greatest in the occupational group professional and technical workers.

The female occupational choice is seen to be a two-way choice between enlisting and remaining a civilian as a function of the net advantages of military life. The choice is made for the three-year span of time,⁷ the minimum enlistment term for females in the Navy. The decision is made on the basis of maximizing utility: if the utility of pecuniary and non-pecuniary advantages of the Navy exceed those of the civilian option, the woman enlists.

Because the Services bear the training costs (at full pay), in pecuniary terms the person would almost inevitably be better off, for a given amount of education such as a high school diploma, opting for the military alternative, regardless of sex. This being the case, there should have been no need for a draft and no need to speculate about the adequacy of the labor supply under the All-Volunteer system. An explanation for manpower shortfalls is the valuation of non-pecuniary advantages. (For example, during the Vietnam War, many men would have placed a negative value on the non-pecuniary stream of advantages, heavily weighted by the chance of being wounded or killed in combat.) Implicit in the non-pecuniary stream of benefits (and costs) would be factors such as taste for military life.

The female occupational choice differs from the male occupational choice in several ways. First, as has been stated, the female has three options -- market work, non-market work, and leisure. Most males have only two options -- work and leisure. Non-market work, the housewife alternative, is the choice of about half of the married women aged 20-24 years. Because women typically spend some part of their work life as housewives, there is a lesser payoff to undertaking training.⁸ But the

⁷ A little under half of the female volunteers enlist for three years in the Navy. To be sent to school for training for a specific rating, a woman must enlist for four years. Some of those enlisting for three years change to a four-year term during basic training.

⁸ The sex labeling of jobs and the pay differences that continue to exist mean a lower rate of return to women than to men for any given training for an occupation apart from the fact that women spend less time than men in the occupation.

observed propensity to enlist for females is lower than the economic advantages of the military choice would suggest. The influence of the range of occupational choices open to women in the civilian and in the military is one possible explanatory factor, which is examined next.

C. Changing Female Occupational Choices

Civilian Economy -- Oppenheimer [16] examined the trend from 1900 to 1960, of the extent to which women have worked at "women's work" (or the occupations in which 70 percent or more of the workers were women) and found little change in female occupations during the sixty-year period. Between 1960 and 1970, there was a minute drop in the percent of women in the female occupations.

Another way to get a picture of whether or not women are expressing new occupational preferences is to examine those occupations experiencing a large rise in the number of women. A cut-off point was selected at a doubling of the number of experienced civilian women workers for any given occupation from 1950 to 1960 and from 1960 to 1970. A dramatically different pattern emerges for the most recent decade (see Table 3). Twice as many occupations that meet the criterion for the 1960 to 1970 period than for 1950 to 1960 fall in occupational groups which are not female dominated. Of greatest interest is the large number falling in the craftsmen and operatives occupational group.

Data on employed women in the civilian labor force for the occupational group craftsmen shows women entering occupations that are dirty, strenuous, and otherwise characterized by attributes generally regarded as distasteful work for females. Some examples are: boilermakers, bulldozer operators, carpenters, cement and concrete finishers, cranemen, derrickmen, hoistmen, electricians, auto mechanics, molders, plumbers and pipe fitters, and others. Many of these occupations still employ only small numbers of women.

It is the direction of the change taking place that serves as the only indicator of a change in female occupational preference, or of existing preferences that formerly could not be revealed for lack of

TABLE 3
 NUMBER OF OCCUPATIONS FOR WHICH WOMEN IN THE
 EXPERIENCED CIVILIAN LABOR FORCE DOUBLED
 BETWEEN 1950 TO 1960 AND 1960 TO 1970

Occupational Group	1950 to 1960	1960 to 1970	Total in occupational group
Professional and kindred workers	0	11	32
Managers and administra- tors, except farm	5	0	43
Sales workers	5	3	10
Clerical and kindred workers	3	7	15
Craftsmen	0	9	21
Operatives	1	4	36
Laborers, except farm	0	1	13
Farm workers	0	2	5
Service workers	5	3	21
Occupation not reported	1	0	1
Total	19	40	197

Source: Council of Economic Advisers. Economic Report of the President to the Congress. Washington, D.C.: Government Printing Office, 1973). [7, pp. 155-159].

opportunity. There is no way to debate the fact that little change took place ". . . in the direction of occupational similarity between 1960 and 1970." [7]. It is argued that only the absence of sex discrimination would yield a true pattern of female occupational preferences. Because there is sex discrimination, the existing pattern of female occupational distribution yields a distorted picture, for purposes of analysis one must look, therefore, to the kinds of changes taking place.

Choice and Change in the Navy -- Another question that neither available empirical data nor economic models can answer is the impact of wider occupational choice in the military on the female enlistment decision. Insofar as the military occupations have a civilian counterpart, a comparison of alternatives is relatively straightforward. But insofar as the newly opened occupations in the military are not open to women in the civilian economy, they represent a wider range of choice in the total job market, which should increase enlistment rates more than opening up an occupation in the military that is already open in the civilian market. The fact that there are civilian occupations having no military equivalent would continue to act as a dampening factor on enlistments.

The value of wider occupational choice in the military depends on whether civilian occupations are closed to women, or whether the absence of women in some civilian occupations is a reflection of female occupational preferences. Clearly, it is not a question of either/or, but how much of each. At one extreme, opening up of craftsmen occupations in the military that are male dominated in the civilian sector would have little value because women have no interest in them. At the other extreme, opening craftsmen occupations has great value because women who want them have been denied the opportunity of entrance to them in the civilian sector. The fact that women do not seek to enter an occupation is no proof that their behavior reflects their preferences. They may believe that an occupation is not open to women, and not seek to enter it, particularly if substantial human investment is required. Or, the mere fact that it is male dominated may deter women.

The services have already taken action to broaden the range of military occupations. Table 4 shows the change in the enlisted female

TABLE 4

ENLISTED FEMALE OCCUPATIONAL DISTRIBUTION IN
FISCAL YEARS 1972, 1973, 1974 AND 1975

Year	Administrative	Medical	Other	Total
1972	42.7%	41.0%	16.3%	100%
1973	23.5	28.6	47.9	100
1974	22.8	27.7	49.5	100
1975	18.0	26.5	55.5	100
1972-75	-24.7	-14.5	+39.2	

Source: Department of the Navy, Bureau of Naval Personnel.

TABLE 5

DISTRIBUTION OF TRAINING SPACES FOR MILITARY WOMEN,
FISCAL YEARS 1973, 1974, AND 1975

<u>DOD Occupational Group</u>	<u>Percent</u>		
	<u>1973</u>	<u>1974</u>	<u>1975</u>
0. Seamanship Specialist	1.9%	1.1%	0.9%
1. Electrical Equipment Repairman	9.1	7.5	8.4
2. Communication and Intelligence Specialists	17.2	20.1	22.2
3. Medical and Dental	28.6	27.7	26.5
4. Technical and Allied Specialists	3.9	3.6	4.5
5. Administrators and Clerks	23.5	22.8	18.0
6. Electric/Mechanical Equipment Repairman	10.2	9.3	11.4
7. Craftsmen	1.8	3.2	3.0
8. Service and Supply	3.7	4.8	5.1
Total Percent	100.0%	100.0%	100.0%
Total Number	2,917	4,535	4,826

Source: Department of the Navy, Bureau of Naval Personnel.

occupational distribution from fiscal year 1972 to 1975, from administrative and medical fields to other specialties.

The Navy also has acted to change its training plans as part of the implementation of the occupational changes. Table 5 shows changes in training plans for the Navy from fiscal year 1973 to fiscal year 1975. Although Medical and Dental Specialists and Administrative Specialists and Clerks still account for nearly half the training spaces, there are also relatively large concentrations of women in occupational groups (2), (6), (1), and (8).

The implementation of female occupational diversification plans by the Navy between 1972 and 1975 is indicated by the fact that during fiscal year 1972 in DOD occupational group 2 (Communications and Intelligence Specialists), most of the women were in the ratings Radioman and Air Controlman. In DOD occupational group 6 (Electrical/Mechanical Equipment Repairmen) and in group 8 (Service and Supply Handlers), there were no women at all. In DOD occupational group 1 (Electronic Equipment Repairmen), most of the women were in the ratings Electronics Technician and Ocean Systems Technician. In group 4 (Other Technical and Allied Specialists), there was a relatively large concentration in one of the ratings, Photographer's Mate.⁹

The rating Data Processing Technician (which accounted for 10 percent of the women in the DOD administrative and clerical occupational group) is rapidly growing in the economy. It would be reasonable to assume that the Navy rating Data Processing Technician will grow in numbers of both sexes. Engineering and science technicians is another rapidly growing occupational category in the civilian economy. Here the Navy offers a relative advantage because the DOD occupational groups Electronic Equipment Repairmen and Communications and Intelligence

⁹The information that is presented is based on data contained in U.S. Department of the Navy, Bureau of Naval Personnel. Navy and Marine Corps Military Personnel Statistics. (Washington, D.C.: Bureau of Naval Personnel, 1972). [28, p. 38].

Specialists train people for technical work and are approximately one-fourth of all training spaces.

D. Sociopsychological Influences on a Military Occupational Choice

The woman who chooses the Service as an occupation faces a double hurdle: (1) she faces censure from society by leaving the traditional feminine domain to have a career, and (2) she faces censure by entering a male domain.

The female enlistee must have a strong motive to achieve¹⁰ or she would opt for an occupation other than the military, which is characterized as a male domain and as highly competitive. Because of the uniform, the masculine nature of the military overrides the fact that within the military, one can function in a job that has the same description as in civilian life.¹¹ Given that most women who do have a high motivation to achieve are torn between the motive to achieve and a "fear of success," or loss of femininity, what is the likely outcome for the woman who is

¹⁰The "motive to achieve" describes a desire to perform capably in a situation for which there are prescribed standards of excellence and is therefore used interchangeably with the term "need to achieve."

¹¹The importance of the role played by the uniform is pointed out by Nathan Joseph and Nicholas Alex. "The Uniform: A Sociological Perspective." American Journal of Sociology, 77. (January, 1972). [11, p. 726] as:

"The uniform influences the wearer himself, for everyone is another who proffers the same mirror. Since no other statuses, or any touch of individuality, are recognized in the uniformed individual by others, he is encouraged to act primarily as an occupant of his uniformed status. The definition of his status and of his duties may vary between colleagues and public, but both groups will agree on his key social position. For his peers, on the other hand, the uniform underscores a common membership, allegiance to the same set of rules, and the probability of similar life experiences. If he is an outsider, the uniform stresses the differences in status, norms, and way of life. It serves, then, to bind the wearer to his peers and to separate him from outsiders."

motivated enough to compete in the male domain? Bardwick believes that:

Women who are motivated enough to enter the marketplace in spite of traditional role-demand and prejudiced expectations are putting themselves in a position where self-esteem may be lost instead of enhanced. It is probable that the motivation of these women to succeed is very high, especially because they have a lot to lose. [1].

Obviously anyone who succeeds in a situation where there is a lot to lose through failure, would have her self-esteem greatly enhanced through success. Bardwick states further that "The fear of success should be higher in competitive rather than noncompetitive situations, and it should be higher when women are competing against men." [1, p. 179]. It should also be higher in areas outside of the traditional female roles, or closer to traditionally masculine activities.

The Prestige of Military Occupations -- Some discussion of the status of various occupations is relevant because an occupation's status in society influences occupational choice. The importance of status in the sociological literature rests on the idea that in every society there is a system of positions to be filled, some of which are held to serve more important functions than others. Social stratification results from different rewards for different functions. "The greater rewards are given to those positions which have the greatest social importance and require the greatest amount of training and talent." [6].

The findings of Baudler and Patterson on the status of female occupations are listed in Table 6.¹² Ranking of occupations shows little variation by sex (a positive correlation of .98). [29]. Hodge, Siegel, and Rossi report that occupational-prestige hierarchies are similar from country to country and from subgroup to subgroup within a country [10].

¹²The findings of Lucille Baudler and Donald G. Patterson "Social Status of Women's Occupations." Occupations, XXVI (April, 1948), [2, pp. 421-424], are based on survey results from 763 students of both sexes by high school seniors, college freshmen and sophomores, upperclass undergraduates, and graduate students of personnel and vocational psychology.

TABLE 6

RANK ORDER OF 29 WOMEN'S OCCUPATIONS BASED ON
MEDIAN SOCIAL STATUS RANKINGS BY 736
STUDENTS, 1948

Occupation	Median Ranking	Median Rank Order	Mean Ranking	Standard Deviation
1. Physician	1.26	1	2.95	4.47
2. Artist	4.79	2	7.38	6.69
3. Nurse (registered)	5.10	3	6.36	4.77
4. Journalist	5.90	4	7.33	5.11
5. Professional musician (symphony)	5.92	5	7.84	6.34
6. Teacher (high school)	7.91	6	8.58	5.05
7. Designer	8.69	7	9.62	5.49
8. Commercial artist	9.50	8	9.62	5.63
9. Secretary	9.89	9	10.31	5.05
10. Buyer	9.99	10	10.69	6.08
11. Teacher (elementary)	10.96	11	11.21	5.30
12. Music teacher (high school)	11.45	12	11.87	4.75
13. Music teacher (private)	11.57	13	12.12	4.95
14. Teacher (kindergarten)	12.20	14	12.47	5.51
15. Nurse (practical)	14.50	15	13.82	6.38
16. Professional musician (dance orchestra)	14.95	16	14.84	6.54
17. Steno-Typist	15.57	17	14.52	5.59
18. Dressmaker	18.90	18	18.29	5.08
19. Salesperson	19.13	19	18.60	4.60
20. Office machine operator	19.62	20	24.90	4.99
21. Show card writer	20.27	21	19.93	4.72
22. Hairdresser	20.31	22	19.26	5.38
23. Sales clerk	22.10	23	21.15	4.76
24. Telephone operator	22.14	24	19.44	5.62
25. Factory sewing machine operator	25.00	25	23.80	4.22
26. Factory operative	25.22	26	23.82	4.93
27. Servant	26.68	27	25.81	3.28
28. Waitress	27.73	28	26.33	3.99
29. Laundry Worker	27.83	29	26.72	3.84

Source: Lucille Baudler and Donald G. Patterson, "Social Status of Women's Occupations," Occupations, XXVI (April, 1948). [2, p. 423].

Included among the ninety occupations examined by Hodge and others were "captain in the regular army" and "corporal in the regular army." The relative ranks of these two occupations remained quite stable, the former ranking 31.5 in 1947, and 27.5 in 1963, the latter ranking 64.5 in 1947, and 65.5 in 1963 (see Table 7).

A Canadian study that constructed a socio-economic index for 320 occupations in Canada [5] included among the occupations "member of the armed forces" (this occupation included both officers and enlisted personnel). The socio-economic index uses data on education and income of people in the given occupations.¹³ The range of the index is from a high of 76.69 to a low of 25.36. The index number for "member of the armed forces" is 41.43.

In sum, enlisted membership in the military is considered as a relatively prestigious occupation. If one compares the rankings of Baudler and Patterson and those of Hodge, one sees that 41 percent from the former (occupations 17-29) are in the last group (beneath "corporal in the regular army") of the latter. In terms of social prestige, enlistment in the regular Service, then, is more prestigious than most of the alternatives a young woman faces. Most women enlisting in the Army who had previous work experience, had worked in factories or in restaurants. The move to the military as an occupational choice for these women is consistent with a rise in social status.

An important aspect of the social status of occupations for the female occupational choice, and especially for the military choice, is that several of the occupations falling around or lower in rank than "corporal in the regular army" are ones that women typically fill in large numbers. Further, most occupations ranking higher than "corporal in the regular army" require an educational attainment above a high school diploma, and thus are not a feasible alternative, or they are not open to women, or open to women on only a limited scale.

¹³The method used is discussed by Blisshen in "Occupational Class Scale."

TABLE 7
DISTRIBUTION OF OCCUPATION PRESTIGE RATINGS, 1947 AND 1963

Occupation	Rank		Occupation	Rank	
	1947	1963		1947	1963
U.S. Supreme Court judge	1	1	Biologist	24	24.5
Physician	2.5	2	Sociologist	26.5	27.5
Nuclear physicist	18	3.5	Instructor in public schools	34	27.5
Scientist	8	3.5	Captain in the regular army	31.5	27.5
Government scientist	10.5	5.5	Public school teacher	36	29.5
State governor	2.5	5.5	Owner of a factory that employs about 100 people	26.5	31.5
Cabinet member in federal govt	4.5	8	Building contractor	34	31.5
College professor	8	8	Artist, exhibiting in galleries	24.5	34.5
U.S. representative in Congress	8	8	Musician in a symphony orchestra	29	34.5
Chemist	18	11	Author of novels	31.5	34.5
Lawyer	18	11	Economist	34	34.5
Diplomat in U.S. foreign service	4.5	11	Official of an internat'l labor union	40.5	37
Dentist	18	14	Railroad engineer	37.5	39
Architect	18	14	Electrician	45	39
County judge	13	14	County agricultural agent	37.5	39
Psychologist	22	17.5	Owner-operator of a printing shop	42.5	41.5
Minister	13	17.5	Trained machinist	45	41.5
Member of board of directors of a large corporation	18	17.5	Farm owner and operator	39	44
Mayor of a large city	6	17.5	Undertaker	47	44
Priest	18	21.5	Welfare worker for city govt	45	44
Head of a department in state govt	13	21.5	Newspaper columnist	42.5	46
Civil engineer	23	21.5	Policeman	55	47
Airline pilot	24.5	21.5	Reporter on a daily newspaper	48	48
Banker	10.5	24.5	Radio announcer	40.5	49.5

[Continued]

TABLE 7--Continued

Occupation	Rank		Occupation	Rank	
	1947	1963		1947	1963
Radio announcer	40.5	49.5	Streetcar motorman	68	70
Bookkeeper	51.5	49.5	Lumberjack	73	72.5
Tenant farmer	51.5	51.5	Restaurant work	71	72.5
Insurance agent	51.5	53	Singer in a nightclub	74.5	74
Carpenter	58	53	Filling station attendant	74.5	75
Manager of a small store in a city	49	54.5	Dockworker	81.5	77.5
A local official of a labor union	62	54.5	Railroad section hand	79.5	77.5
Mail carrier	57	57	Night watchman	81.5	77.5
Railroad conductor	55	57	Coal miner	77.5	77.5
Traveling salesman for a whole-sale concern			Restaurant waiter	79.5	80.5
Plumber	51.5	57	Taxi driver	77.5	80.5
Automobile repairman	59.5	59	Farm hand	76	83
Playground director	59.5	60	Janitor	85.5	83
Barber	55	62.5	Bartender	85.5	83
Machine operator in a factory	66	62.5	Clothes presser in a laundry	83	85
Owner-operator of a lunch stand	64.5	62.5	Soda fountain clerk	84	86
Corporal in the regular army	62	62.5	Sharecropper--one who owns no live-stock or equipment and does not manage farm		
Garage mechanic	64.5	65.5	Garbage collector	87	87
Truck driver	62	65.5	Street sweeper	88	88
Fisherman who owns his own boat	71	67	Shoe shiner	89	89
Clerk in a store	68	68		90	90
Milk route man	68	70			
	71	70			

Source: Robert W. Hodge, Paul M. Siegel, and Peter H. Rossi, "Occupational Prestige in the United States, 1925-63," *American Journal of Sociology*, LXX (November, 1964). [10, pp. 290-291].

III. Female Enlistment Decisions

During the last fifteen years, the Navy has experienced an excess supply of female volunteers.¹⁴ In addition, the first-term reenlistment rate¹⁵ has consistently been higher in recent years for females than that for males. (See Table 8). Although both male and female reenlistments have been rising during the FY 1969-1975 period, the upward trend for females was at a faster rate than that for males.

Occupational choice theory deals primarily with career choice. It is argued that the enlistment decision is typically one of job choice. The military job choice is different from others because the person commits himself to a contractual agreement with the military for at least three years, whereas the average job tenure for civilian workers aged 18-24 years is only .7 years [15]. The military job choice is an occupational choice (not necessarily in the military, however) insofar as the individual is motivated to enlist because of the training the Services offer. Approximately half of the women enlisting do make an occupational choice, since they enlist for a four-year term, placing them in a program that guarantees them a school seat for a specific Naval rating.

The initial enlistment decision appears to be regarded by most enlistees as a decision on what they regard as a strictly temporary period in their lives.¹⁶ It is a reasonable guess that most females

¹⁴The Navy Recruiting Command maintains that an excess supply of female volunteers has existed for at least this long. Specific data on numbers of volunteers as opposed to goals have only been kept since 1970.

¹⁵This means that those remaining in the "eligible for reenlistment" category are probably more likely to reenlist on the basis of their past success.

¹⁶Because first-term reenlistment rates are markedly lower than second or subsequent reenlistment rates, it seems reasonable to conclude that most young men and women have regarded the first-term enlistment as part of a temporary period between school completion and the beginning of a career (or a return to school). This conclusion is borne out by the

probably view the initial enlistment decision as a temporary job between the time they finish high school and the time they marry and form families -- regardless of their future work plan. This guess is not without foundation.

A. Female Attitudes Toward Enlistment

A recent survey of young women's attitude toward enlistment in the WAC¹⁷ indicates that the initial enlistment is a job choice for most. Only 9 percent planned to marry after finishing school and 55 percent believed that they would continue their education.¹⁸ In giving their reasons for interest in the WAC, the strongest response was to travel¹⁹ (33 percent), followed by learning skills/career development (21 percent), and opportunity to meet people (16 percent). The most frequent responses to the advantages of joining the WAC were opportunity to travel (64 percent), learning job skills (30 percent), and meeting people (32 percent). Only 3 percent felt retirement benefits to be an advantage, indicating a short time horizon on the part of these women.

results of studies carried out by the Human Resources Research Organization on enlisted men in all branches of the service, which found that the time in the Service seemed to have little impact on post-service plans. See Arthur J. Heohn, "Recruits' Post-Service Occupational and Education Plans: Nature and the Extent of Influence from Early Military Experience," HumRRO Technical Report 72-15 [9], and "Post-Service Occupational and Educational Plans of First-Tour Military Personnel Nearing Separation from the Service," HumRRO Technical Report 72-19 [8]. (Alexandria, Virginia: Human Resources Research Organization, 1972). (Multilith.)

¹⁷ Central All-Volunteer Force Task Force, Utilization of Military Women. [26, pp. E-1 - E-20].

¹⁸ It should be noted, however, that marriage was not a listed response to the questions asked.

¹⁹ Since job opportunities were not very diverse prior to 1973, one would expect some bias toward "travel" as a motivating factor in enlistment.

TABLE 8

NAVY MALE AND FEMALE FIRST-TERM AND CAREER
REENLISTMENTS, FISCAL YEARS 1969-1975

Sex and Year	First - Term			Career		
	Eligible	Reenlist- ments	Percent	Eligible	Reenlist- ments	Percent
1969						
Male	76,182	12,412	16%	31,013	24,343	78%
Female	703	98	14	143	91	64
Total	76,885	12,510	16	31,156	24,434	78
1970						
Male	123,657	12,742	10	35,499	29,737	84
Female	717	102	14	133	99	74
Total	124,373	12,844	10	35,632	29,836	84
1971						
Male	77,755	13,710	17	32,791	29,510	90
Female	455	134	30	134	109	81
Total	78,210	13,304	17	32,925	29,619	90
1972						
Male	73,438	17,053	23	31,170	28,351	91
Female	567	229	40	91	76	84
Total	74,005	17,282	23	31,261	28,427	91
1973						
Male	77,093	17,530	22.7	38,497	35,296	91.7
Female	745	360	48.3	150	128	85.3
Total	77,838	17,890	22.9	38,647	35,424	91.7
1974						
Male	54,106	17,599	32.5	46,054	36,987	80.3
Female	1,265	604	47.7	159	117	73.5
Total	55,371	18,203	32.9	46,213	37,104	80.3
1975						
Male	50,377	20,026	39.8	41,998	33,838	80.6
Female	1,262	586	46.4	263	188	71.4
Total	51,639	20,612	39.9	42,261	34,026	80.5

Source: Department of the Navy, Bureau of Naval Personnel. [28]

B. Female Attrition in the Military

Information on military attrition, by sex, also substantiates the supposition that most women regard their initial enlistment in the military as a job choice. The attrition rates for females are higher than attrition rates for males across the Services (see Table 9). Many women are released early from their enlistment contracts. (Data is kept only in the aggregate on those eligible for reenlistment.) This category has ranged from 20 to nearly 50 percent of all enlisted separations during the past five years. The fact that so many women do not complete their term of enlistment suggests that of those who do, more are likely to be eligible for reenlistment than their male counterparts.

Table 10 contains information on losses as a percent of average enlisted strength for fiscal year 1972, by cause of attrition. This information shows that of the losses arising from "honorable" reasons, for example, marriage and pregnancy, as opposed to unsuitable behavior, are the prime reasons for women leaving the Service. The category marriage and maternity-minor children account for nearly 50 percent of the attrition among female enlisted personnel.

The Air Force serves as a good example of the effect of policy changes. In 1967, the policy that a woman could request a discharge if she married and had completed at least eighteen months of her Service commitment was rescinded. Since fiscal year 1967, attrition because of marriage has fallen, as one would expect. Second, beginning in fiscal year 1972, women with minor children were allowed to remain in the Air Force, under special conditions. It is too soon to assess the impact. Although policy changes would lead to a lesser attrition rate because

TABLE 9
 ATTRITION PATTERN FOR MALE AND FEMALE
 ENLISTED PERSONNEL^a

Service	Sex	Percent remaining in Service after				
		6 mos.	18 mos.	30 mos.	42 mos.	54 mos.
Army	Male	91.5	85.2	41.2	17.8	10.9
	Female	86.4	54.3	21.6	12.5	7.2
Navy	Male	91.5	81.0	65.2	60.4	16.5
	Female	81.0	62.7	46.2	7.4	3.7
Air Force	Male	96.6	88.6	85.3	77.6	16.0
	Female	90.2	62.8	43.3	28.3	9.6
Marine Corps	Male	77.5	65.8	29.0	23.0	7.3
	Female	71.4	45.5	27.6	6.6	0.2

^aBased on accessions between 1 July 1966 and 30 June 1971. During this period, length of enlistments differed between Services and between males and females within a Service.

Source: U.S. Department of Defense, Office of the Assistant Secretary of Defense (Manpower & Reserve Affairs), Central All-Volunteer Force Task Force, Utilization of Military Women (A Report of Increased Utilization of Military Women FY 1973-1977), Washington, D.C., 1972. [26, p. 36]. (Multilith.)

TABLE 10
 ATTRITION AMONG FEMALE ENLISTED PERSONNEL DURING
 FISCAL YEAR 1972, BY SERVICE AND CAUSE

Reason	Army	Navy	Marine Corps	Air Force	DOD
Expiration of term of service and early release ^a	26.0%	33.3%	23.1%	14.5%	24.2%
Unsuitable behavior ^b	22.9	22.7	37.8	22.0	24.0
Other ^c	16.8	13.3	9.8	17.2	15.6
Marriage and pregnancy	34.3	30.7	29.3	46.3	36.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Number	5,300	2,081	1,044	2,826	11,251

^aSeparations for reenlistment are not included in tabulations.

^bUnsuitable behavior means in general failure to meet minimum performance or behavior standards. Specific categories include motivation, alcoholism, drugs, bad debts, civilian offenses, convenience of the government, general unsuitable behavior, good of the Service, and others. The bulk of the offenses are general unsuitable behavior and motivation.

^cIncludes retirement, death, medical disqualification, dependency and hardship, losses to officer programs, Secretarial authorization, and erroneous enlistment.

Sources: Unpublished data from the office of Eli S. Flyer, U.S. Department of Defense, Office of the Assistant Secretary of Defense (Manpower & Reserve Affairs), 1973.

of marriage,²⁰ attrition because of pregnancy cannot be expected to fall much.²¹

C. The Queue of Female Volunteers

The Navy maintains that it has experienced a queue of applicants for enlistment for more than the past ten years, i.e., an excess supply of female volunteers. Information on the attainment of recruiting goals has only been kept since 1970. Since 1970, enlistment goals have been filled. Shortfalls of female enlistees occur ex post: at the last moment for some reason accepted applicants failed to show up.

As of January 1, 1973, recruiting goals for females in the Navy rose from 220 a month during 1972 to 660 a month during 1973. In spite of the three-fold rise in recruiting goals, 1973 monthly goals were filled 100 percent. Nowhere in the reports and daily memoranda in the files prior to the increase in January goals is there any reference to anticipated problems in attaining the higher goals.

IV. The Procurement of Enlisted Females for the Navy

The difference in pay between civilian and military alternatives at the point where the supply of women is in equilibrium with the demand

²⁰ Many women do not find it feasible to remain in the Service after marriage because of problems that arise from changes of permanent station. Many military women marry military men. The Services try to transfer such couples together, usually stipulating that if such a move is not feasible, the young woman may resign from the Service after a specified period of time.

²¹ This is under the regulation as it now stands. The U.S. Department of Labor defines pregnancy as a temporary period of disability. Should the Services adopt such a definition of pregnancy, female attrition rates would be significantly affected. However, to the extent that attrition is caused by reason of marriage alone, a relaxation of the rules regarding pregnancy would not impact on attrition rates.

would indicate the value placed on non-pecuniary advantages and disadvantages of military service. Unfortunately, no such equilibrium position can be observed because there has been an excess supply of women volunteers at the relative benefit ratio prevailing during the last fifteen years. Adjustments between demand and supply are made through varying the quality of enlistees rather than through changing pay.

A. The Demand for Female Volunteers

Service policy, until quite recently, dictated that only up to two percent of enlisted strength would be composed of females. In the light of the change to an All-Volunteer system, womanpower as a military resource has been receiving increasing attention. Previously, any manpower shortages arising have been met by use of the draft.

The projected increases of female military personnel, by branch of Service, for fiscal years 1972-1978, are presented in Table 11. Revised Navy plans call for female enlisted year-end strengths to rise to 20,000 for fiscal year 1976 and to hold about constant at that level until fiscal year 1978.

The demand for Navy female enlisted personnel can be estimated on the assumption that there is no sex discrimination or barriers to women in the Navy. A cross index of Navy ratings, by Department of Defense Occupational Group, and their closest corresponding Census Occupational Category was used.²² The derived demand for females in the Navy in the absence of discrimination reflects the implicit assumption that women are the same proportion of workers in each corresponding military occupation as in the civilian economy.²³ On this basis, women in the civilian

²²Such a cross index was prepared [12]. Because of the difficulty of matching military and civilian occupations, the figures yield numbers that are only suggestive of the true situation.

²³This assumes that there is no sex discrimination in the civilian economy, or that discrimination does not affect the occupational distribution of women, which is not necessarily correct.

TABLE 11

SERVICE PLANS FOR INCREASING FEMALE ENLISTED MILITARY
PERSONNEL, FISCAL YEARS 1972-1978, END STRENGTHS

Fiscal Year	Army	Navy	Marine Corps	Air Force	Department of Defense
1972 (actual)	11,889	5,998	2,066	11,535	31,488
1973	15,900	8,137	2,150	14,741	40,928
1974	20,000	13,381	2,252	19,776	53,639
1975	22,000	17,292	2,362	23,617	64,288
1976	23,000	20,000	2,472	29,229	73,225
1977	23,500	20,000	2,500	35,298	80,761
1978 ^a	23,800	20,000	-----	41,544	-----

^a Only the Army and the Air Force had carried their expansion programs into fiscal year 1978 at the time these figures were submitted to the Department of Defense.

Sources: U.S. Department of Defense, Office of the Assistant Secretary of Defense (Manpower & Reserve Affairs), Central All-Volunteer Force Task Force. Utilization of Military Women (A Report of Increased Utilization of Military Women FY 1973-1977), Washington, D.C., 1972 [26, p. 47]. (Multilith).
Navy figures from 1974 on are from the Department of the Navy, Bureau of Naval Personnel.

economy could fill about 41 percent of all Department of Defense Occupational Group jobs. If women actually did fill Navy ratings in the same proportion as they are represented in corresponding Census occupations in the civilian economy, they would fill about 19 percent of all Navy ratings. These estimates are shown in detail in Table 12.

Women are prohibited by Federal law from serving on any Navy vessel other than hospital or transport ships, and are prohibited by regulation from billets that are combat oriented, physically too strenuous, or would put women in special jeopardy.

In an unpublished submission to the Office of Budget and Management, the Naval Bureau of Personnel estimated that combat designated billets prohibit women from approximately 60 percent of Navy billets. This estimate is consistent with the number of sea billets in fiscal year 1972, that accounted for 61.3 percent of all enlisted Navy personnel. Assuming that the distribution of sea and shore billets by Navy ratings accords with Federal and regulatory prohibitions on the use of women in Navy billets by rating, one arrives at an estimate of the constrained demand for women. One finds that 7.4 percent of the Navy could be female on these grounds. If this percent female proved to be feasible, the female quantity demanded would be 35,409.

This final estimate may still overstate the proportion of women feasible. Factors peculiar to the military may further limit the feasible percent female. In the absence of specific data, a discretionary reduction of this number by one-third would provide a lower bound estimate of 5 percent female, or 23,925 for fiscal year 1972. The British currently use a 4 percent female strength in their All-Volunteer Services.²⁴ The total demand for females by the Navy is thus from 5 to 7.4 percent of enlisted force strength, or a range from 23,925 to 35,409 women. The annual demand for female enlistees is less than these numbers,

²⁴It is not possible to determine from available information whether the use of a 4 percent female strength by the British is either demand constrained or supply constrained.

TABLE 12

ESTIMATED NAVY DEMAND FOR ENLISTED FEMALES,
BASED ON CIVILIAN OCCUPATIONAL DISTRIBUTION
BY DOD OCCUPATIONAL GROUP

Department of Defense Occupational Group	Actual Civilian ^a % Female	Actual Navy ^b Total % Female	Estimated female Navy		Estimated female Navy (combat restricted)	
			Number ^c	Percent	Number	Percent
0 Infantry, Gun Crews, Seamanship Specialists	2.0%	41,299	826	2.0%	177	.4%
1 Electronic Equipment Repairmen	2.8	73,617	2,061	2.8	531	.7
2 Communications and Intelligence Specialists	6.3	46,251	2,914	6.3	885	1.9
3 Medical and Dental Specialists	76.9	27,591	21,217	76.9	11,508	41.7
4 Other Technical and Allied Specialists	12.9	6,650	858	12.9	389	5.8
5 Administrative Specialists and Clerks	63.7	60,451	38,507	63.7	15,155	25.1
6 Electrical/Mechanical Equipment Repairmen	3.1	156,376	4,848	3.1	1,346	.9
7 Craftsmen	3.1	34,033	1,055	3.1	177	.5
8 Service and Supply Handlers	59.6	32,231	19,210	59.6	5,241	16.3
Total	41.0	478,499	91,496	19.0	35,409	7.4

^aAs of 1970.

^bAs of fiscal year 1972.

^cNumber in Navy if females were the same percent as in the civilian economy.
less than .01 percent.

Source: Civilian estimates are from U.S. Department of Commerce, Bureau of the Census, Population of the U.S.: 1970, U.S. Summary, pp. 718-723 and pp. 772-773. Navy data are from an unpublished table from the office of Eli S. Flyer, U.S. Department of Defense, Office of the Secretary of Defense (Manpower & Reserve Affairs).

since the average female enlistee remains in the Navy more than one year, in fact, approximately two years (see Table 9). Thus annual recruitment demand is from 12,000 to 17,700, as a maximum (ignoring multiple enlistments).

No account is taken of the sea-shore rotation system in the above calculations. It is apparently a myth that the present number of women, and the planned expansion for enlisted females, interferes with the sea-shore rotation system.²⁵ When a man is rotated from sea to shore and a female holds a billet that corresponds to his billet, or a billet he could potentially fill, she can be moved elsewhere to create an opening. Sea and shore billets are rarely identical in skill requirements, and therefore need not be paired inflexibly.

B. The Supply of Female Volunteers

Traditional means of estimating the supply curve are not usable [25] because the quality of enlistees, as measured by scores on the Short Basic Test Battery [30] varies from one point of time to another. All that is presently known about the number of potential female volunteers is that an excess supply exists. The supply curve is assumed to be some normal distribution of eligible female enlistees (those with scores in the Short Basic Test Battery of 151-220). In addition to the earnings or benefit ratio, an unemployment variable would influence the enlistment decision, as would the opportunities for training in the military service. A point along the supply curve of female enlisted volunteers is estimated in the following way. The number of eligible females in the population aged 18-24 years is distributed into the Armed Forces Mental Groups (MGs) according to the national population distribution by mental group. Using the actual fiscal year 1972 enlistment accessions in conjunction with the annual eligible pool of women, the propensity to enlist (P_{enl}) is derived for each mental group. These figures are shown in Table 13.

²⁵ Lieutenant Commander Clarence M. McQuaig, U.S. Department of the Navy, Bureau of Naval Personnel, Washington, D. C. Telephone interview August 14, 1973.

TABLE 13

ELIGIBLE FEMALES FOR ENLISTMENT, AND NAVY, ARMY, AND DOD FISCAL YEAR 1972
ACCESSIONS, AND THE PROPENSITY TO ENLIST BY MENTAL GROUP

Mental group	Annual total eligible ^a	Navy female accessions	Propensity to enlist	Army female accessions	Propensity to enlist	DOD female accessions	Propensity to enlist
I	20,220	114	.006	745	.037	1,193	.060
II	80,880	1,110	.014	5,181	.064	9,727	.120
III (upper)	43,328	970	.022	85	.002	2,807	.064
Total	144,428	2,194	.015	6,011	.042	13,727	.095

^aThe annual total eligible is derived in the following way. The eligible population of women aged 18-24 years is divided by seven, or the number of years of age between eighteen and twenty-four, the age range that accounts for the bulk of enlistments.

To calculate the minimum eligible pool of female volunteers, the P_{enl} for MG-I is applied to the population of eligibles for the other two mental groups. Because the Navy has attempted to enlist the best qualified females first, it is assumed that the majority of those desiring to enlist from MG-I are accepted. Because there are qualifications other than Mental Group, not all those desiring to enlist are able to do so. Further, it is assumed that an inverse relationship exists between Mental Group and the propensity to enlist.²⁶ For these reasons the P_{enl} from MG-I is used to calculate the minimum eligible pool estimate. The total obtained by using this method is 859, or 1,295 short of the number actually accessed in fiscal year 1972. This shortfall suggests two factors in operation either separately or together. First, not all women qualifying in MG-I are actually accessed. The ability of the Army to attract a much higher proportion of MG-I women than the Navy is indirect evidence. Using the Army female MG-I rate would increase the minimum supply estimate to 5,341.²⁷ Second, and probably more important, propensities to enlist vary between mental groups. The same factors are believed to operate for women as for men that lead to differential propensities to enlist by mental group. Thus the propensities to enlist for males are examined for fiscal year 1972. The existence of an excess supply of women volunteers, higher accession standards for females than for males, and a resulting tendency to cream the eligible pool, results in differential accession rates for females by mental group quite different from that for males. The differential accession rates for males in MGs-I, II, and III (upper) are a better indication of what might be expected if demand for females ranged from 5 to 7.4 percent of all accessions. The fiscal 1972 experience approximates the P_{enl} under a no-draft situation (inductions were only 15 percent of total Army accessions).

²⁶Survey questionnaires reveal this assumption to be borne out for males (U.S. Department of Defense, Attitudes of Youth, [25, p. 43].

²⁷This number is less than Army female enlisted accessions in fiscal year 1972 by 670 women.

The P_{enl} for both the Army and the Navy are presented in Table 14.²⁸ The expected inverse relationship between Mental Group and the propensity to enlist was borne out, except for MG-III (lower). This might be attributable to higher rejection rates.

TABLE 14

PROPENSITY TO ENLIST OF MALE ARMY, NAVY, AND
DEPARTMENT OF DEFENSE ACCESSIONS, BY MENTAL GROUP
FISCAL YEAR 1972

<u>Mental Group</u>	<u>Army</u>	<u>Navy</u>	<u>DOD</u>
I	.246	.134	.545
II	.378	.209	.878
III (upper)	.647	.350	1.587
III (lower)	.623	.209	1.318
IV	.772	.401	1.710

The Army P_{enl} by mental groups, when applied to the eligible female population, yields a maximum number of female enlistees, assuming women have the same motivation to enlist as males. If females volunteering to the Navy exhibited the same P_{enl} as Army males, the eligible pool of females would have been 63,580 for fiscal year 1972, and if the same P_{enl} as Navy males, 34,779.

It is reasonable to assume that the Navy has features intrinsic to it that make it more attractive than any other Service choice to a particular individual. If this assumption is valid,²⁹ then the upper

²⁸Those eligible for the military are arrived at by taking the figures presented by the U.S. Department of the Army, Recruiting Command (Handbook of Military Available Inventory, Pamphlet 601-1, March 1972), [20], and deflating them for those lost to the military because of enrollment in school.

²⁹In response to the question asking young women to rank order their preferences of women's military service, Central All-Volunteer Force Task Force, Utilization of Military Women [26, p. E-14], the first choice was Navy (37%), Air Force (34%), Army (17%), and Marine Corps

limit of the P_{enl} for Navy females is that of Navy males. However, there is no constraint placed on male enlistment as there is on female enlistment. Further, the occupational opportunities for males are much greater than for females in the Navy, although the difference was reduced in fiscal 1972. This means that if it is the variety of occupations or skills that is an important enlistment inducement for men, the lack of variety for women would lead to a lesser propensity to enlist. Also, to the extent that benefits have not been as readily available to married women, a limiting factor is at work. The impact of liberalization of occupations and skills on female's P_{enl} depends in part on women's eagerness to diversify their occupational choice and in part on the Navy's ability to place women in the occupations, given the constraint of combat designated billets.

C. The Volunteer Market in Equilibrium

The equilibrating mechanism between the demand for and the supply of female enlistees is not pay but qualitative adjustments made according to the prevailing recruiting standards. We would expect a rising average quality level of volunteers accepted if we assume that the excess supply has been rising through time. This seems probable on the basis of the increasing numbers in the 18-21 age bracket in recent years, but in the future, demographic trends will be less favorable.

Because there is no way to test the supply by implementing a policy of taking as many applicants as wish to enlist (and that qualify), nor by

(9%). This finding appears at odds with the experienced fiscal 1972 propensities to enlist, which are higher for the Army than for the Navy, by mental group. A similar divergence exists between male attitudes toward enlistment ex ante and ex post. Ex ante, males prefer the Navy, Air Force, and then the Army for enlistment (U.S. Department of Defense, Attitudes of Youth, pp. 56-58), although ex post the propensities to enlist are ordered high to low Navy, Army, and Air Force. One explanation is that the questions are put ex ante to people who may or may not intend to enlist.

varying wages, there is no way of determining empirically the point at which the excess supply disappears. Instead, it is necessary to follow the supposition that recruiters, by attempting to take the best applicants, bring the market into equilibrium using the quality of recruits as the adjustment variable.

Bringing together the demand and supply estimates for fiscal year 1972, we find the following. The maximum quantity of females demanded was estimated 5 to 7.4 percent of enlisted active duty strength, or 23,925 to 35,409, taking into account legal and regulatory prohibitions on utilization of women. However, the annual demand, assuming the average female enlistee stays in the Navy two years, is 11,963 to 17,705. The maximum estimate of female supply in 1972, in the absence of a demand constraint, was 34,779.³⁰ The figures yield an excess supply of female enlisted personnel of 22,816 if only 5 percent female strength is demanded, and an excess supply of 17,075 if the upper limit, or 7.4 percent female strength, is demanded.

D. The Projected Supply of Female Enlisted Personnel

An effort is made to calculate the minimum potential supply of females for the Armed Forces, and in conjunction with the propensity to enlist by Mental Group, to develop data that would indicate the relative ease or difficulty of fulfilling these enlistment goals.

Most of those enlisting are aged 18 or 19, and those aged 18-21 years account for about 90 percent of those enlisting.

Table 15 contains trends of all single women aged 18-24 from 1972 to 1977 and those in the labor force, which indicates the maximum supply of women available to the Armed Forces. For those 18-19 years of age, the labor force participation rate of all women in this age group had to be used. (However, there is very little difference between the participation rates of those single and those married under 20 years of age.)

³⁰It should be recalled that the supply is based on Navy male propensities to enlist for MGs-I through III (upper) only.

TABLE 15

PROJECTION OF POTENTIAL ELIGIBLE POOL OF QUALIFIED
WOMEN FOR THE ARMED SERVICES, 1972 TO 1977
(thousands)

Women by age	1972	1973	1974	1975	1976	1977
Single women, aged 18-24 years ^a						
18-19 years	2977	3038	3077	3159	3206	3203
20-24 years	<u>3333</u>	<u>3405</u>	<u>3486</u>	<u>3570</u>	<u>3632</u>	<u>3724</u>
Total	6310	6443	6563	6729	6838	6927
Single women in the labor force, aged 18-24 years						
18-19 years	1709	1744	1766	1813	1840	1839
20-24 years	<u>2330</u>	<u>2380</u>	<u>2437</u>	<u>2495</u>	<u>2539</u>	<u>2603</u>
Total	4039	4124	4203	4308	4379	4442
Single women qualified for the Armed Services, aged 18-24 years ^b						
18-19 years	428	436	442	454	460	460
20-24 years	<u>583</u>	<u>595</u>	<u>610</u>	<u>624</u>	<u>635</u>	<u>651</u>
Total	1011	1031	1052	1078	1095	1111

^aCalculated from data based on U.S. Department of Commerce, Bureau of the Census, Projections of the Population of the United States, by Age and Sex: 1970 to 2020, Series P-25, No. 470 (Washington, D.C.: Government Printing Office, 1971), p. 19.

^bThe size of the qualified pool is estimated in two steps. The first step is to apply to the number of single women in the labor force (row 2) the overall male rejection rate, 50 percent. The second step is to account for the fact that women are accepted into the Services only from Mental Groups I through III (upper), which means that half of the remaining population is disqualified.

The Services do not keep records on the female enlistees who are turned away, either in the aggregate or by reason for rejection. The overall rejection rate for men,³¹ 50 percent, can be applied to the pool in Table 15. The Navy uses the same physical standards for both men and women. However, women are accepted into the Services only from MGs-I through III (upper). Because women must be high school graduates or have a GED equivalent to be eligible to enlist, it is assumed that all women who qualify in MGs-I through III (upper) meet this requirement. This means that half of the remaining population is further disqualified. We arrive, thus, at one-quarter of the single women in the labor force aged 18-24 years, or 16 percent of all single women 18-24, as the reduced supply of potential eligible female volunteers for the Armed Services. (This is a conservative estimate assuming no correlation between rejection rate and Mental Group.)

Table 16 presents figures indicating the surplus of potential female volunteers relative to the demand for them, based on the assumption that the present demand constraints on the utilization of female military personnel continue through fiscal year 1977. The figures are also based on fiscal year 1972 DOD and Navy male propensities to enlist by Mental Group I-III (upper). Male propensities to enlist are used to arrive at an upper bound to the eligible pool. Since male enlistees may engage in heavy, hazardous, or combat-related work, whereas females may not, the male propensity to enlist may not be an unreasonable indicator for females otherwise given equal access to training and occupations.

³¹The rejection rate refers to all pre-inductees. It is assumed that the distribution of rejectees is the same for females as for males.

TABLE 16

DOD AND NAVY FEMALE ACCESSION REQUIREMENTS, AND
THE POOL OF QUALIFIED FEMALE VOLUNTEERS,
FISCAL YEARS 1973 TO 1977
(thousands)

Requirements/Pool	1973	1974	1975	1976	1977
Qualified pool	1031.0	1052.0	1078.0	1095.0	1111.0
DOD accession requirements ^a	21.7	29.2	31.2	33.2	35.2
DOD enlistment supply ^b	<u>153.8</u>	<u>157.0</u>	<u>160.7</u>	<u>163.4</u>	<u>165.7</u>
Excess supply ^c	<u>132.1</u>	<u>127.8</u>	<u>129.5</u>	<u>130.2</u>	<u>130.5</u>
Navy accession requirements ^d	4.3	6.9	7.9	8.4	8.5
Navy enlistment supply ^e	<u>35.5</u>	<u>36.2</u>	<u>37.1</u>	<u>37.7</u>	<u>38.2</u>
Excess supply	<u>31.2</u>	<u>29.3</u>	<u>29.2</u>	<u>29.3</u>	<u>29.7</u>

^aDOD accession requirements as reported by the Services to the U.S. Department of Defense, Office of the Assistant Secretary of Defense (Manpower & Reserve Affairs, Central All-Volunteer Force Task Force (Utilization of Military Women, p. 13).

^bCalculated using the DOD male propensities to enlist by mental group (I-III (upper)) and applying them to the annual eligible qualified pool of females.

^cIt should be noted that using the DOD male propensities to enlist (see footnote b) more than exhausts the annual eligible pool of females.

^dNavy accession requirements are calculated by assuming that the relationship between DOD end strengths (a stock) and accessions (a flow), by fiscal years, is the same for the Navy as the DOD.

^eBased on Navy male propensities to enlist by mental group (I-III (Upper)).

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